



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 1

JOHN F. KENNEDY FEDERAL BUILDING
BOSTON, MASSACHUSETTS 02203-0001

October 29, 1998

Mr. Barry Cohen
Ciba Specialty Chemicals Corporation
P.O. Box 71
Oak Ridge Parkway
Toms River, New Jersey 08754

Dear Mr Cohen:

EPA has reviewed the August 1998 report written by Woodward-Clyde Consultants which describes the revised estimate of contaminant mass being intercepted by the recovery wells (PW-110 & PW-120) at the Cranston, RI site. As you are aware, this document calculates the contaminant mass removal based on the pumping rates of these wells and the contaminant concentrations in adjacent monitoring wells. According to data gathered in April 1998, the recovery well yields have dropped significantly when compared to the March 1996 data. This has lead to a lower contaminant capture rate of 82% versus the 96% rate in March of 1996 indicating that dissolved phase contaminants are migrating off-site.

As we discussed earlier in October, the objective of the ground water recovery system is to prevent dissolved phase contaminants from migrating off-site to the Pawtuxet River. Given the reduction in well yield and capture calculations in the report are correct, then several steps need to be taken to address this issue.

First, as we have previously discussed, reduction in well yield is not uncommon over time and could be increased significantly by reconditioning the wells. Based on your E-Mail, planning for this process has already begun and reconditioning should begin in December 1998.

Second, based on the Woodward-Clyde report, 50% of the ground water in the area with a transmissivity of 0.3 is not being recovered (see figure 1 in the report). EPA believes that installation of an additional recovery well down gradient of P-34S is necessary to prevent contaminated ground water from reaching the river. This is due partly to the fact that reconditioning the existing wells will not bring them back to peak performance (which yielded around 96% capture) and that they will once again deteriorate over time and the variation in transmissivity across the site.

Third, regular maintenance/reconditioning of the recovery wells should be performed. This can be based on a predetermined interval or on reduction in well yield to the point where full capture is not occurring. A maintenance plan should be developed and submitted to EPA.



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In addition, EPA believes that the 2D model used for estimating contaminant mass removal may not be appropriate. This is based on information contained in the report. Comparison of **predicted** recovery well pumping rates (Table 2) and contaminant removal concentrations (section 2) with **actual** ground water recovery and contaminant discharge concentrations needs to be evaluated. It appears that the total estimated pumping rate for PW-110 & 120 is 36 gpm and the estimate of ground water flow (no pumping) is 44 gpm yet the actual total yield for PW-110 & 120 is 57 gpm. Based on these significant discrepancies in predicted and observed flow rates it appears that the 2D model may not be appropriate and should be re-evaluated. The discrepancies in flow rates are likely related to variations in site hydro geologic conditions with depth.

If you have any questions, I can be reached at (617) 918-1362.

Sincerely,

A handwritten signature in cursive script that reads "Frank Battaglia". The signature is written in dark ink and is positioned above the printed name.

Frank Battaglia